2. Inertia

11. Equator → $g_N > g_e$

Does not matter mass stays the same.

15. Static friction when object is at rest. $\mu_s > \mu_K$.

Kinetic → force of friction acting when the object is in motion.

16. Always opposite the motion.

26. $F_g = 1.10 \times 10^3 N$

$m =$

$g = 9.81 m/s^2$

$F_g = mg$

$m = F_g / g$

$m = 1.10 \times 10^3 N / 9.81 m/s^2$

$m = 111.21 kg$

28. $m = 4.6 kg$

$F_g =$

$g = 25.9 m/s^2$

$F_g = mg = (4.6kg)(25.9 m/s^2)$

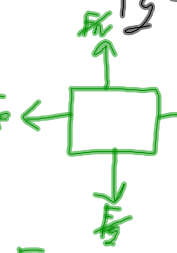
$F_g = 119.14 N$

30. $F_A = 401 N$

$m = 47 kg$

$a = 0 m/s^2$

$F_{net} = 0$



$F_g = F_N = mg = (47kg)(9.8 m/s^2) = 461.07 N$

$F_F = F_A = 401 N$

$F_F = \mu F_N$

$\frac{F_F}{F_N} = \frac{\mu F_N}{F_N}$

$\frac{401 N}{461.07 N} = \mu$

$0.87 = \mu$

Apr 7-9:53 AM

(34) $m = 450\,kg$ @ $F_g = F_N = mg$
$= (450\,kg)(9.81\,m/s^2)$
$F_N = 4414.5\,N$

(b) $F_f = \mu F_N$
$\mu = 0.35$ $F_f = (0.35)(4414.5\,N)$
$F_f = 1545.08\,N$

(c) $F_A = 1.10 \times 10^3\,N$ $F_f \leftarrow$ $\uparrow F_N$ $\rightarrow F_A$ $\downarrow F_g$
$a = 0\,m/s^2$
$F_{net} = 0$

$F_f = \mu F_N$
$\frac{F_f}{F_N} = \mu$
$\frac{1.10 \times 10^3\,N}{4414.5\,N} = \mu$
$0.25 = \mu$

Pg 206 (2) $\vec{F} = F_{net}$

(3) $F_{A\,on\,B} = -F_{B\,on\,A}$ $F_g = F_N$

(5) Going up + down in an elevator.
Different location on Earth.

(8) Someone running with changing velocity.
Car Crash.

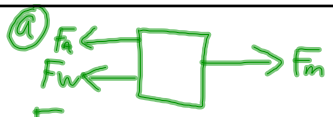
(18) $\vec{p} = m\vec{v}$ car will have greater momentum because it has greater mass

(19) $\vec{J} = \vec{F}\Delta t = N \cdot s = \frac{kgm}{s^2} \cdot s = \frac{kgm}{s}$

$\vec{J} = m\Delta v = \frac{kgm}{s}$
$\vec{p} = m\vec{v} = \frac{kgm}{s}$

Apr 7-10:08 AM

(23) $m = 400\,kg$
$F_a = 2500\,N$
$F_w = 3200\,N$
$F_m = 6000\,N$

(a) 

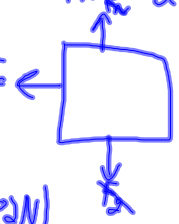
$F_{net} = F_m - F_A - F_W$
$F_{net} = 6000N - 2500N - 3200N$
$F_{net} = 300N$

(b) $\frac{F_{net}}{m} = \frac{ma}{m}$
$\frac{300N}{400kg} = a$
$0.75\,m/s^2 = a$

(30) $m = 0.24\,kg$
$a = 5.0\,m/s^2$
$F = ma$
$= (0.24kg)(5.0m/s^2)$
$F = 1.2N$

(32) $m = 2200\,kg$
$V_i = 45\,km/h$
$V_f = 0\,m/s$
$\mu = 0.70$

$F_N = F_g = mg$
$= (2200kg)(9.8m/s^2)$
$F_N = 21,582N$



$F_f = \mu F_N$
$= 0.70(21,582N)$
$= 15,107.4N$

$F_{net} = ma$
$\frac{-15,107.4N}{2200kg} = a$
$-6.867\,m/s^2 = a$

$45\frac{km}{h} \times \frac{1000\,m}{1\,km} \times \frac{1\,h}{60\,min} \times \frac{1\,min}{60\,s}$
$= 12.5\,m/s$

$V_f^2 = V_i^2 + 2ad$
$\frac{-V_i^2}{2a} = \frac{2ad}{2a}$
$\frac{-V_i^2}{2a} = d$
$\frac{+(12.5m/s)^2}{2(+6.9m/s^2)} = d$
$11.4m = d$

Apr 7-10:26 AM

(37) $m = 5.0\,kg$
$v = 3.5\,m/s$

$\vec{p} = m\vec{v} = (5.0\,kg)(3.5\,m/s)$

$\vec{p} = 17.5\,\frac{kg\,m}{s}$

(44) $m = 0.300\,kg$
$v_i = 44\,m/s$
$v_f = -9.2\,m/s$

$\vec{J} = m\Delta v$
$= m(v_f - v_i)$
$= (0.300\,kg)(-9.2\,m/s - 44\,m/s)$
$= -15.96\,\frac{kg\,m}{s}$

(b) $F = -2.5 \times 10^3\,N$

$J = F\Delta t$

$\Delta t = J/F = (-15.96\,kg\,m/s)/(-2.5 \times 10^3\,N)$

$\Delta t = 0.0064\,s$